

# ABSTRACT OF THE DISCLOSURE

A method and a device suitable for its execution are provided for the anisotropic plasma etching of a substrate, especially a silicon element. The device has a chamber and a plasma  
5 source for generating a high-frequency electromagnetic alternating field and a reaction region for generating a plasma having reactive species inside the chamber, the reactive species being created by the action of the alternating field upon an etching gas, and a passivating gas  
10 that is especially simultaneously introduced but spatially separated from it. Furthermore, an arrangement is provided, by the use of which, in the reaction region, at least a first zone that has etching gas applied to it, and at least a second zone that has passivating gas applied to it, are defined. In  
15 addition to this, the device has a mixing region downstream from the reaction region, using which, reactive species generated from the etching gas in the first zone and reactive species generated from the passivating gas in the second zone are intermixed with each other before acting upon the  
20 substrate.